Copy for Ed Ross

NOTES ON PERUVIAN CALIFORNIA ACADEMY TRIP

by E. I. Schlinger

1954-1955

11 Sept.

9-11-54. We collected at Loma La Char (Chay?) 16 miles north of Chancay in the State of Lima, Peru. Very interesting fauna and flora - only real green area for miles; up in fog zone. A yellow composite was in nice bloom from which some beautiful colletid bees (Coplacana sp.?) were taken. Volucella sp. were taken also on this flower. Other interesting specimens included: Megachile sp., Zylocopa sp., numerous small Diptera and several types of carabids, tenebrionids, etc. Also a series of small black Pepsis.

9-12-54. Stopped on highway about 2 km. north of Pucusana road turnoff (also 5 km. north of Chilca) in State of Lima. This area was mostly covered with dying or nongrowing cactus - a few plants near roadbed - embiids were taken under rocks. Scorpions and many kinds of spiders, including a Puceta sp. and sp. nr. Metagirope trifasciata. A nice series of greyish-white pentatomids were taken under papers on roadside. Thysanura (at least 2 sp.) also under paper. The same Pepsis taken here as yesterday and one of the same colletid bees was seen here as taken yesterday. Camped about 1 mi. south of Pisco, Ica (St.) in a place that looks like the Sahara. Palm trees and sand dunes near the coast. Caught nice series of male mosquitoes in evening.

9-13-54. Drove back up the coast. Collected at seashore - got common flies. Then collected in agricultural area near San Antonio. Got

nice series of trypetids on yellow composite - also one Pepsis with very faint wings. Mesquite trees present - not in bloom. Collected again at cactus hill nr. Pucusana - got more embiids, also nice spiders and two red pompilids. This place is rather unique, being a spur of the Andes reaching out almost to the coast. This cactus and several species of lichens appear to be the only really native plants in abundance. Also, on roadsides were several types of annuals and perennials. We then drove from Lima east into the Andes where we spent the night about 15 km. east of Chosico in the "Verruga" Valley. Saw no Phlebotomus however!

9-14-54. Collected five species of Volucella and beautiful series of two genera of small Bombyliidae as well as a few other interesting ones. Also copulating pair of therevids. Left camp and drove up the great Rimac Valley. Collected few insects just north of San Mateo, including two sp. of Bombus, Anthidini, Megachile, many spiders and beetles. Drove over the high Andean pass (about 16,000 ft.) and on to Carhuamayo in the State of Junin. Turned east on road to Paucartambo and camped around 15,000 ft. in snowing weather - very cold - no insects.

9-15-54. Drove on east to km. 37 on road to Paucartambo (approx. alt. 10,000 ft.). Here we collected few insects, but most important was a large new sp. of embiid - quite common under stones. The valley was grass-covered with several types of shrubs - one a Hypericum and what looked like a Bromeliad growing along stream bank. We checked coming out again for embiids at higher altitude - none. We drove on to Cerro de Pasco through high plains and just after leaving Cerro we dropped immediately and convincingly all the way to Ambo where it does level out somewhat.

Although the side canyons and main Huallago Valley are green, the hillsides are covered with cactus, Bromeliads, Agave, and an area which looks like it was in a rain shadows all the way down to Huanuco. Spent the night in hotel in Huanuco.

9-16-54. Spent most of the day collecting. Got a tremendous number of specimens of Hymenoptera including Oxybelus, Polybia, Pepsis, bembicids, etc. Got pterophorids: Diabrotica (2 sp.) on squash, some nice conopids and nice series of Blues (5 sp.) as well as few hesperids. Most of Hymenoptera came from Baccharis sp. Collecting down on the Rio Huallaga yielded some Trichoptera and Mayflies, while farther down the road (dry cactus country) we got mostly spiders and Coleoptera. Saw lovely Mexican movie and went to bed.

9-17-54. Left Huanuco 8:30 A.M. for the long-awaited drive to Tingo Maria. We collected two times (about 30 mi. N.E. of Huanuco) in the pre-tropics; that is, just before the rain forest. Ed got several new species of embiids, while the tachinids and Bombus attracted me. Also nice tabanids, anthomyiids, and (colletids that were dug from cells in dirt bank about 4 feet high - cells about 4 inches long, parallel to rock surface about 1 inch underneath). After driving on up to the crest (about 9,000 feet) we had definitely hit the tropical rain forest. It was quite dense and the humidity immediately rose. The ride down is a windy one and altogether one drops about 7,000 feet in 50 miles (it's all beautiful). Down near the bottom, the canyon becomes very narrow, the jungle very dense, and beautiful waterfalls. We swept in the spot (10 miles S.W. Las Palmas) and got a beautiful selection of insects. We

arrived in Tingo about 6:30 P.M. - a beautiful resort hotel (got aquatics here).

9-18-54. Met Mr. Clayton Long, Head of Experiment Station, this morning, and he arranged an excellent laboratory for us - better than in the States. Spent most of the day fixing up lab.; however, we did manage to collect about 1 box of specimens in an hour or so. The insect fauna here seems tremendous. This evening we went to Long's house for coffee, and the Allards were there as well as one other couple - and Julie, a girl who wanted to go to the dance! Just as we were leaving we noticed all kinds of insects at the lights so we collected for a while. There were probably 10 species of katydids alone at this light; also more aquatic Leps for Lange. There was an anthophorid and an asilid, some some tabanids, an ascalaphid, some beautiful large moths, etc. One of the interesting things is that this morning (and tomorrow morning) it rained about 1 hour at 6:00-7:00 A.M., then didn't rain all day. Temperature today was very nice - not too humid.

9-19-54. Spent the day collecting and just enjoying the situation at the hotel.

9-20-54. This was the first week of activity in Tingo. We spent much of our time over across the Huallaga or the Rio Monzon Road collecting about 1/2 mile from the Monzon bridge. This was still virgin valley forest mixed with nice hillside and canyon growth. Striking examples of mimicry have been seen all week as well as examples of much adaptive radiation. I shall cite a few. Mimicry: A tiger beetle (arboreal) that is a dead ringer for an ant when walking - not quite so good looking when mounted, though. Basic color is same and head is ant-like. Color

same as gold and black foraging ant. Another was a beautiful micropezid fly that resembles an ichneumonid in every feature. Not having long antennae of white and black as the Ichneumon does, the fly holds up its first pair of legs in the air, the tibia and tarsi matching perfectly the Ichneumons. The other legs, however, are red as the Ichneumons. The two examples were mounted. Another was a mantid that so resembled a walking stick that it looked like a stick (about 4-5" long). One of the interesting things noted was the fact that the head was almost able to turn 360 degrees ( ). Another mantid collected in a log was exactly bark-colored and blended beautifully. Also a reduvid species as a log inhabitor. Another reduvid poses as an orange meliponid. There is a black syrphid that I collected as a meliponid, also. One of the best examples is a leafhopper about 1 inch long of orange and brown color, which not only resembles when dead a species of Polistes but when alive even flies like the Polistes and has the power to hover near flowers. Truly remarkable. I have been fooled every time. Of course, there are numerous examples, well known and otherwise, seen all the time. The aquatic lep. situation totals about 15 species (?) and appears to be about the commonest moth at lights. The katydids never cease to amaze us - there being at least 40 kinds already procured. There are also abundant cicadas here at this time of year. We have had actually very little rain this week - I would say under 2 inches all week. The days have been wonderfully clear and sunny for the most part. I do notice a paucity of bloom everywhere. The rubber trees are just going out of bloom now.

9-25-54. We drove on out the Pucallpa Road about 18 miles but did very little collecting as there was lots of agriculture.

9-26-54. We drove back to Las Palmas and on up the Carpish Canyon 10 miles S.W. of Las Palmas. Collecting was fair and good for butterflies. Also, I took over 1,000 bees of many families by sweeping over once recent urine spots in the road. These spots were literally black with bees flying around and alighting - even some such as panurgids were meeting there. Butterflies and solitary vespids were also using these spots for something--what? Procured such families as megachilids, colletids, hyleids, panurgids, halidids, a Stelis and a Zylocopa.

9-27-54. This evening we were collecting down at the Rubler nursery getting some things damaging rubber shoots, when I noticed a group of wasps underneath the 3 folded rubber leaves - this being common as terminal shoots. Upon closer examination I ascertained them to be none other than larrids resting for the night. I collected 15 - only 2 or 3 got away. What type of gregarious resting habit have the larrids accomplished? Tomorrow we leave for Pucallpa. We have been living in our house all week now.

9-28 to 10-5-54. Our time was spent on the 28th going from Tingo Maria to the C.E.P.A. rubber area called "Yurac" about 20 miles N.E. of the Boqueron Abad. Collecting places included 28 miles E. of Tingo Maria and 34 miles E. of Tingo Maria; also about 24 miles W. of Yurac. Yurac is 67 miles E. of Tingo Maria. Excellent collecting was found at the last-named area which was just about 5 miles over the Boqueron Pass in a newly cut area where coffee was recently planted. We also collected

two times in the "Cordillero Cerro Azul", the last real range of mountains before the Amazon Valley reaching up about 5-6,000 feet. Very beautiful and mostly virgin forests covered by clouds at least some of the time. Tea is also grown here in large amounts. The night collecting at Yurac was quite good, it being clear and warm. The Boqueron Abad is truly a beauty spot with many high waterfalls and steep canyon walls. Yurac is located in a rather flat area but with dense forest on both sides. About 3 miles E. of Yurac is a large river spanned by the largest suspension bridge in Peru. The towns name by the river is "Aquatyia". This is also the name of the river.

Sept. 29 was spent going to "San Jorge" the S.C.I.P.A. cattle area which is about 40 (39.5) miles W. of Pucallpa. We did collect in several spots (13 miles E., 30 miles E., and 39 miles E. of Yurac), however, much of our time was spent getting the car there over the wet roads, etc., the best collecting spot being 30 miles E. of San Jorge in semi-mountainous country where the jungle had huge rubber trees 3 feet in diameter. Night collecting at S.C.I.P.A. was also quite good.

Sept. 30 was spent getting through to Pucallpa over the rainy roads. No collecting was attempted.

October 1 and 2 and part of the 3rd were spent at the linguistica place called Yarina Cocha, which was located about 4 km. N.W. of Pucallpa by trail (10 km. by road). Collecting was very good for general groups including embiids. A Mr. Townsend, head of the place, put us up and all was fine except we had to be careful of our language, etc. The afternoon of October 3 we drove on to S.C.I.P.A. at San Jorge, otherwise known as "Nasuia". Did a little more light collecting and that's all.

October 4 was spent collecting between San Jorge and Yurac. One of the most interesting stops being made in a rubber plantation (native) where collecting was different and done under darkened conditions because of the heavy upper growth. A lot of sweeping just east of Aguatilla (labeled as Yurac or 67 miles E. Tingo Maria) yielded many good things. Night collecting at Yurac gave fair results, getting above all a couple of ascalaphids.

October 5 was spent going from Yurac to Tingo Maria. We again collected at 24 miles W. of Yurac (43 miles E. Tingo Maria) and in fact spent most of the day here. Even though it wasn't sunny, wonderful collecting was had on the newly cut logs and on the coffee plants which seemed to attract all sorts of insects even though not in bloom.

10-6 to 10-9-54. The 6th was spent getting all the stuff from the Pucallpa trip squared away and pictures taken, etc. Also, the discovery of some good series of sclerogibbids were taken with the embiids from Yurac.

The 7th and 8th were spent doing general collecting over at the Monzon here in Tingo. On the 8th I worked in a man-made dugout bank obtaining wasps and discovered philanthids were nesting in fair numbers. One nest was dug and here is the dope: The opening was small (1/8") and surrounded by an outer depressed circle thus
Immediately under the opening the burrow widened to 1/4" or 3/8" in some places. The length to the first branch cell was 6", the length to the end of the last cell being 7-1/2 to 8". A lateral view looked like this:

A front view like this:

A dorsal view like this:

Cell #1 had mature pupa which was accidentally smashed, and the remains of bees. Cell #2 was filled with 8 bees and 1 small larva feeding. The bees were mostly halictines, but also (?) meliponids. Cell #3 was not quite finished but had 9 bees and the female wasp was going out after one more when I caught her. I timed one visit: From departure to return with bee - 2-1/2 minutes. Other trips (4) which I observed this female seemed to be about the same time length (one 5 minutes, some 3 minutes). A male seemed to be looking for females and when this female was gone the male stopped flying and actually went into the burrow for 5 seconds. Whether they mate here is questionable. No other males, however, were seen to return to the nest during the hour while I was there. The female was quite alert and could perceive something amiss when I was as close as 5 feet to the burrow, as she would not come out. She would stay in the opening and back up slight and come forward again. When I retreated to 6 feet she seemed to favor it and would fly away. Others were nesting in this bank, including a cercerid, vespids, possibly a bembicid, and I found two nice mutillids here as well crawing around.

The 9th of October was spent collecting at the canyon of the Cave near here. The most interesting catch was a walking stick which had a female heleiid feeding on it. Ed took pictures of it (dead) and it was placed in alcohol intact. This may be an interesting record. Looks a

lot like Forcipomyia sp. It seems of interest to note that for the last three nights there have been hardly any insects coming to the lights even though mostly clear. It has been cool, however. But what a difference - no great numbers of cicadas or katydids, not to speak of moths and aquatic leps. We did get our first acanthomerid fly at light last night.

10-10 to 10-12-54. These days were spent collecting around Tingo Maria. The 12th was a day spent 5 miles up (at lumber mill) the Monzon Road (N.W. of T. Maria). Many interesting things were collected and Ed saw a black acrocerid (probably Lasia) but didn't have a net to get it. He said it was very large. Sounds like a new species. It rained on and off all afternoon so didn't see any more. This was about 2:00 P.M. Another species of acanthomerid was also taken.

10-13 to 10-16-54. Collecting during this period was done almost exclusively up the Monzon River near the lumber mill. Many interesting specimens were taken and many species new to our collection. No more acros have been seen. A different species of acanthomerid was taken up here and good series of Trichopoda. The conditions were good for collecting butterflies on the urine spots in the road.

10-17 & 18-54. Ed and I spent two days in the Carpish Mountains - the locality given as 40 miles S.W. Tingo Maria, East Crest of Carpish. Several new species of embiids were taken here as well as some specimens of Perripitus. The elevation of collecting site was about 9,000 ft. mostly just below cloud layer but still in tree fern zone. The spiny tachinids (Dejeania) were rather common on Baccharis sp. but only a

few specimens of each species could be found. In all, about 25 species, including Paradejeania (or Eudejeanea) were taken. Two male Pepsis were collected along with some other nice hymenopterans.

10-19 to 10-26-54. During the past seven days we spent most of our daylight collecting hours up the Monzon at the lumber mill site. Collecting has continued to yield new species every day to our collection and Ed is getting good shots of insects, and the butterfly collecting has been great in this area, partly because of the fecal materials deposited along the roadside. Probably the most interesting catch of the week was a red penultimate katydid which so much resembled an Ichneumon wasp (common to this area) that I almost killed it before I realized what I had. It is the most beautifully matched insect I've ever seen - even the size is close. The coloration of body legs (femur red - rest yellow) the antennae black (short) and a white intermediate area, and even a dorsal pattern on abdomen that looks exactly like appressed wings. The abdomen has a rapid up-and-down movement and likewise the antennae, as does the Ichneumon. Ed got good series of pictures. A remark might be made here concerning temperatures: From Sept. 17 to Oct. 26 the minimum temperature was 68° F. and the maximum was 84° F. this being house readings, but the house is thoroughly open to air currents on all sides (screened). Night collecting has been very good, the pyralids dominating the scene.

10-27 to 10-29-54. The 27th was spent exploring the hill behind our house. Only two hours of good collecting, though, as it started to rain and didn't stop. Got a few real nice things, though. The 28th was spent up at Monzon with the usual number of new species to our collection,

including a nice yellow and black cuterebrid. The 29th was spent at the Canyon de los Cuevas. It was a nice sunny day and many new species were taken for the collection. The sawflies were especially abundant; also nice Ichneumons and pompilids including a nice green Pepsis. Also, we discovered a beautiful black anthophorid nesting site and also some nice meleotids. More work will be done on this (see my biology notes).

10-30 & 31-54. Collecting on Monzon area not too hot as weather hasn't been too good. However, we are still adding species at the rate of 30-40 a day. How long can this keep up! Halloween here was rather quiet; however, spent the evening at the Allards with the Longs and Crespos.

11-1 to 11-4-54. Nov. 1 and 2 was spent collecting up the Monzon and not very good days at that. It's been very dry and the plants wilt in the afternoon and the insects just don't come out.

Nov. 3. Spent whole day in bee nesting area working to get cells and bio-notes. Ed took some pictures of the cells in excavation and flight of bees. Collected 2 new species of asilids, one of which was trying to catch the big black anthophorid. Shall go back in a couple of weeks to study them again.

11-5 to 11-8-54. And still we have found the best collecting up the Monzon. The 7th of November being the only day no real collecting was done because of cloudy and cold weather all day. Both the 6th and 8th were very good days with many insects. On the 6th I got 7 bombyliids in Anthrax, Villa, Exoprosopa and ?. The funny thing is all were taken in the morning about 9-11:00 and none were seen after that, nor on any other day before or after up to the 8th. The asilids are really coming out now,

also more tachinids and the hymenops are just now in good flight. A Euphorbiaceae and what looks like a Baccharis and a mint being good flowers. The vespids are getting better and cercerids and bees are becoming more common. Night collecting has been getting poorer and poorer and tonight (8th) there were only a dozen or so moths, no cicadas or katydids as before. Even the aquatic moths are disappearing very markedly - only 4 taken tonight.

11-9 & 10-54. Nov. 9 was spent as a good day up the Monzon. Saw no bombyliids. Got lots of asilids and many new species. Nov. 10 it rained most of the day but did go out to the bee site at Canon de las Cuevas and collected a few things there. Today Ed developed some of his black and whites. Spent the evening at Mrs. Long's for dinner, etc. Very little light collecting.

11-11-54. Went with Allard today to a place about 15 miles N.E. of here at Mr. Saliz's place. We crossed the Tullamayo River in a canoe and walked into his house and lumber mill. We then walked up hill to the mesa (about 700-800 meters high) through beautiful jungle. We then went down a little to see the lake on top of the mountain. The lake is now almost dry, but water lines on palm trees in the meadow show it to get 5-6 feet high and I should judge 3/4 mile long and 1/3 mile wide. Much of the northwest end is nice meadow bog with beautiful little flowers. We collected some new leps and water beetles here. Some nice bromeliads were in bloom in the forest but that's all. It rained a good part of the day and didn't actually get too much in the way of insects.

11-12 to 11-15-54. The 12th was a wonderful day spent up the Monzon and many new species were added. The butterflies were especially abundant again over the urine and dung. The urine story seems to be this: the first day the urine is on the ground about the only thing really attracted are ants (phytophagous). The second day and up to a week or 10 days thereafter, depending on the consistency of the urine salt (?), it attracts butterflies, grasshoppers, expecially eumastacids, bees, certain coreids, scutellarids, and of course flies of various families - in the main, tachinids. Even though there is plenty of water available all the time in the streams and on the leaves of plants, these insects seem to prefer the urine. Of the bees, anthophorids, megachilids, and meliponids are quite common. The 13th it rained but I collected at Zecevitich's place across the river by the Monzon bridge. The 14th was also a good day up the Monzon, it being very humid after the rain. A few more flowers are coming out now. The 15th collecting was done around the house. The nights of the 14th and 15th were really hot - the first time in several weeks.

11-16-54. Made the trip to Yurac (Yurac = 67 miles E. Tingo Maria) after a 3-hour mud-slide wait just outside of T. Maria. The night collecting was out of this world - probably got over 1,000 moths and many other niceties. The reason probably being due to the intermittent rains which would force great numbers into the lighted area.

11-17-54. Spent the day collecting around the headquarters and some of the afternoon collecting down at the rubber plantation. Ed got several nice new species of embiids and on the whole a very good day.

The night stuff was very good, too, but not as good as last night.

11-18-54. Collected just W. of Yurac, got the blue mantispid alive for pictures. Also got Lange some aquatic lep larvae and pupae. Then made a big stop at the coffee plot 43 miles E. Tingo Maria. The Boqueron was beautiful with clear weather and from the Divisorio we could see the Amazon plain through the Boqueron.

11-19, 20-54. Spent these days at the Monzon Lumber Mill with good results. Noticed a few new flowers out and good Hymenoptera collecting. Night collecting was good both nights. Took Allards out to dinner at hotel on 20th.

11-21-54. Spent the whole day preparing for Iquitos trip.

11-22-54. After arriving at airport ready to go at 7:30 A.M. we found the plane had engine trouble. They said it would be 8, 9, 10, 1, 2 o'clock -- and then not until tomorrow.

11-23-54. Again at airport at 7:30 A.M., but more engine trouble so spent the whole day at the river front waiting, but they didn't get it fixed, but said for sure tomorrow.

11-24-54. After arriving on time Vangermum said they had it fixed but in order to make sure, they were going only to Tarapoto, and so at 8:45 A.M. the plane took off for Tarapoto. This was the end--the tragic end, for after 20 minutes in flight they radiod everything fine, and that's the last we ever heard of the C-47 bomber. The collecting that was done from Nov. 22-24 was done around house, at river front in town, and an hour or so at Monzon bridge area.

11-25-54. Today (Thanksgiving) was spent up the Monzon and a good day at that. The little whitish-yellow composite is now in pretty good bloom and offered me much in the way of new species to our collection. For example, 2 new conopids, 1 new Pepsis, 2 new Chlorion, 2 new Nycidalis, 2 or 3 new Trichopoda or Polistomyia, several new tachs, as well as good series of several vespids, etc. The way the insects gather around this flower suggests a Baccharis flower and may be one, but is it a long, thin-stemmed plant? Tonight we spent turkey dinner at the Long's with Allands, Crespos, and 2 Peruvian doctors from Lima.

11-26-54. Rained all morning. Went up to Monzon in afternoon and had only hour or two of collecting, but got some new stuff as usual. The night collecting lately hasn't been staggering, but very nice new moths and others as well.

11-27-54. Spent the day at Monzon trail with some nice collecting. Some nice new tachs. Got 2 staphilynids in association with Eciton sp. running very fast on the same ant trail. The ants paid no attention to them and when the beetle stopped the caudal end went up in the air--the ants would stop and move on (smell?). The beetles traveled faster than the ants but always on the trail. I watched them for 10-12 feet before collecting them.

11-28-54. Rained all morning. I went to bee area in afternoon - got a few insects. Ed developed pictures. Night collecting was very poor, very cool temps and sun didn't shine all day.

11-29-54. Today was cloudy nearly all day. Went up Monzon in afternoon and went aquatic collecting in lumber mill stream. Got very

little. My best catch was a Pepsis, dark metallic brown male, with entire antennae bright yellow. Also got aquatic leps and a couple of specimens of a strange family of Hemiptera that were feeding on bird dropping on a leaf.

11-30-54. Spent most of the day up the Monzon and got some nice things. It should be noted, however, that we are getting fewer and fewer new species each day now. I'd say we were well over halfway through the species here.

12-1-54. Collected all day at Canyon de las Cuevas and got some very nice things. The Ichneumons were particularly good and several new asilids, as well as new butterflies and other dipterans.

12-2-54. The morning was spent with poor collecting at the city dump (2 miles S. of town). Bot a new pompilid (red) and a series of bembicids. The afternoon, though cloudy, was spent up the Monzon and collecting wasn't too good. Rain set in about 4:00 P.M. A note on the temperature for November: Max. = 84° F., Min. = 68° F.

12-3-54. Collecting done again at Monzon with only fair results as it was cloudy most of the day. Got several new species, however. Night collecting was very good - probably due to the rain last night. Spent evening at Long's as Allards went to Lima today.

12-4-54. Rained all day so we spent our time writing letters, etc.

12-5-54. Ed and I went up above Las Palmas (5 miles S.W. Las Palmas) and collected along the river gorge all day. The day was cloudy, but some good things were taken. On the whole, few new species were added to our collection.

12-6-54. Collected up the Monzon and had a very good day. Got 2 more bombyliids: 1 Toxophora (new species to collection), 1 Lepidophora (?). Got lots of Leps and vespids, bees, and particularly tachinids of all sorts. One of our best days - many new species came out. Light collecting has been poor.

12-7-54. Today, due to a slow, steady rain all day long, we stayed home - wrote letters, notes, etc.

12-8-54. Spent the day up the Monzon and collecting was quite good. A considerable number of tachinids of various species were collected by the "spit method." Night collecting has been very poor the last week or so.

12-9-54. Very cloudy all morning - collected in area at Zecovitches all afternoon. Several new things - also did some sweeping - got many good small flies.

12-10-54. Off to Yurac. Did some collecting 26 miles E. of Tingo Maria (+ sweepings) which is on west side of Divisoria. Also some collecting around Yurac but light collecting not too good.

12-11-54. Collected all day at Yurac and Aguaytia (which is only 1 mile E. of Yurac). The night collecting was quite good - large grasshoppers and scarabs and new moths. (Got strange therevid and Rhagio fly (?) in day time.)

12-12-54. First stop on way back to Tingo was 50 miles E. of Tingo Maria - still on Amazon plain about 5 miles from Boqueron. The most interesting things taken were some semi-aquatic lep larvae (possibly arctids) in a small 10' x 15' pool about 12" deep (rather stagnant - dark

colored water with lots of algae). I thought they were dying caterpillars, but soon found they were quite alive and in a normal condition as Ed insisted they were. He got pictures and a bunch of them were brought back to Tingo alive - some to rear, some to boil! They swim like wigglers and their manner of feeding is like mosquito larvae. It appears as though their spiracles may be nearly dorsal. The larvae were most 1-1/2" to 2-1/2" long, grey bodied, covered with black hair, and orange-brown hair dorsally with which the air was trapped when under water. In trying to keep them alive, it was noticed that they seemed to live all right out of water as well as in water! Night collecting in Tingo showed us a new set of moths. Also got my first diopsid fly at light. Also we collected in cattle range area on E. side of Divisoria (near top) at 40 miles E. of Tingo Maria. Also sweepings.

12-13-54. Spent day just going over lab. materials and planning on trip out of here for good. Night collecting was very good tonight - several new moths and about 8 species of katydids - all ones we have, however. (One of those larvae from near Yurac is still alive today. When placed in warm water it seems to revive - in cold water it becomes immotile. Took it out of water tonight - hope it pupates).

12-14-54. Spent day developing pictures and I collected at Zecovitches all afternoon. Light rain - light collecting good!

12-15-54. Spent only afternoon collecting in Monzon. Not too many new things. Night collecting again was excellent. We all feel a little (Tourista) today from something we ate!

12-16-54. Spent all afternoon in cave up Monzon. Got many interesting insects and pictures. Got many nice spiders (ulaborids, filistatids, and others) and also were bitten by "bird mites" (look like parasitids). Several of them definitely got a blood meal from me, and we now think they could be the vector for the caves fever (= "K" fever) ? Light collecting good tonight.

12-17-54. Again went into cave - got many pictures, insects, and did some archaeology! Altogether we got lots of pieces of pottery, some small bones, some snails and 2 nice stone ax heads. Also, got a few pictures of cave. Night collecting fair.

12-18-54. Again spent all afternoon in cave trying to get bird flight pictures and others. Did get a huge pedipalpid, front legs spread = 24" tip to tip, may be the largest living land arthropod - no! Night collecting very slow.

12-19-54. Spent the last (?) day in the cave today providing the pictures turn out. Night collecting fair.

12-20-54. As it rained all day we merely caught up on letters and developed pictures. A few new moths were taken at night.

12-21-54. Went up to cave (but not inside) - collected in the coffee plot and photographed. Very cool this evening as was last night - 68° F. at 12:00.

12-22-54. Spent good collecting afternoon in Monzon. Several nice new flies. One bombyliid taken during sweeping was a new genus to the area; however, is in very bad shape. Night collecting good and still we get new katydids (?).

12-23-54. Went back to cave again today to finish up the pictures. Spent the morning getting food and stuff for the"kids" on Christmas. Night collecting very poor.

12-24-54. Spent the afternoon in the cave and really got some good shots - also killed one bird and made a skeleton specimen out of it. Night collecting fair.

12-25-54. After a nice breakfast at Long's with Allards, Crespos and kids and Reese Reed, took Christmas presents out to all our Indian friends on the Monzon Road. Christmas dinner was at Allards - turkey, too. Then went down to the station to see the poor ones get presents. Some fellows had a three-toed sloth there - first one I'd seen. Collecting at night was very good - in between rains. Also got 2 tachinid-parasitized sow-bugs today on tree - six feet above ground - near lichens.

12-26-54. Spent all day just preparing for exit from here on the 28th. Night collecting excellent - many new moths!

12-27-54. Spent day getting ready to go.

12-28-54. We said goodbye to Tingo Maria today and went to Huanuco (about 80 miles S. of Tingo Maria). Collecting wasn't too good as cloudy or raining most of the day. Collecting spots included 20 miles S. of Tingo Maria near tunnel, sweepings and Diabrotica (squash) from 40 miles S. of Tingo Maria. Embiids were taken at 32 miles N. Huanuco, and some 27 miles N. Huanuco, and under-rock collecting done 17 miles N. Huanuco.

12-29-54. Today it was cloudy all day - some rain and hail and so very little collecting. Our lunch stop at about 13,000 feet was 5 miles N.E. of Cerro de Pasco. Got nice tachinids, some dolichopodids and bibionids. Camped over the ~~xxxxx~~ mountain from Carhuamayo at K 48.

12-30-54. Collected around here and at old K 37 embiid stop all morning, then drove through the cold weather to Tarma. Collected a little just before entering Tarma. Stayed in hotel.

12-31-54. Drove from Tarma to Colonie Perene today through some rain. Beautiful country with steep canyons. Collected 4 miles E. of Acobamba and again at 11 miles W. of San Ramon. At the Acobamba site got nice Diabrotica on alfalfa + tachinids, meloids and several nice blue Bombus. Also embiids. At San Ramon site got several species of embiids. Also did some collecting at Colonie Perene - got 3 Oxybelus on Baccharis and others.

1-1 to 1-3-55. Spent New Year's Eve and the next 3 days at the Kent's "Colony Perene" on the Rio Perene (18 Miles N.E. of La Merced.) Had a nice stay and obtained many insects, including one nice (sapygid ?) female on January 2. Night collecting was good only one night.

1-4-55. Drove up to Tarma - through rain all day. Very little collecting possible, although some things were taken about 2 miles W. of San Ramon. The gorge drive was really beautiful even though we had to wait until 6:00 P.M. to pass through the control.

1-5-55. Drove to Lima today and didn't collect, as it was very cold and a very long drive.

1-6 to 1-8-55. Settled in the 28th Julio Hotel and managed to get our box of cigar boxes out of customs on the 8th. We have been rearranging our load and now have 6 wood boxes packed to ship north. Did a little collecting in Dr. Wille's yard in Lima today.

1-9-55. Spent the day at Loma La Char (maybe it's La Chay?) near Chancay 55 miles N. of Lima. Got embiids on ridge behind first hill.

The plants were quite different, a beautiful orange lily in full bloom and quite extensive. Got one therevid female and 1 mydaiid male (very important) good records. The place was much drier than on Sept. 11, 1954 when we first visited - sun shone most of the day. Also 1 nice female tiphid - desert form.

1-10 to 1-13-55. All this time we have been in Lima trying to get visas, etc.

1-14-55. Left Lima in the afternoon at about 4:00 and headed north up coast. We camped on the beach cliffs north of Huaura and slept outside - wonderful camp - few insects. However, we did find cicadas on the cliffs of the beach and only in isolated pockets. Only 2 spec. were taken, as it was very dark when we noticed and began to search them out. This was about 6:30-7:00 P.M.

1-15-55. Drove on up the coast to Trujillo and then headed up into the Andes for Otuzco and Choquisongo. We camped that night at about 8,000 ft. just outside of Otuzco in an alto-plano zone and got a few moths but that's about all.

1-16-55. After going to Otuzco and deciding not to go on over to Choquisongo we drove back and collected outside of town during the morning. The most interesting catch to me was the black widow and also got 3 males, but they look like 2 sp. (?) Then about 4 miles on down Ed found some embiids under rocks in a rocky, Euphorb-cactus zone. At about 15 miles E. of Trujillo we collected some bombiliids and bees (see pics. of place). Drove on up coast to where we camped near (north) of Pacasmayo. Got a few cicadas there at night.

1-17-55. After driving into Chiclayo we spent all afternoon getting our car fixed (oil line). We camped 40 miles N. of Chiclayo in a mesquite dry desert area, but had very good night collecting. Even got 2 sp. of therevids.

1-18-55. We took the Jaen turnoff just before Olmos and drove up. The country in the lower valleys was thick growth of thorn, forest type. A little higher up it got very dense with rather large trees, lots of epiphyties and moss on the trees. Then up toward the pass it was very green with grass and a few smaller trees. The Andean pass at this point was only 2,144 meters. After going along for several miles on the east side with the same vegetation and cactus, we dropped suddenly and the grass quit and it became quite dry. There were still trees, however, and cactus in this dry area. We followed the rim of the Huancabamba quite a ways with the vegetation increasing all the way down to where we camped, 94 mi. E. Olmos, in Mesquite country. Light collecting was fair - got some aquatics but no time to pin them.

1-19-55. Drove on down to within 14 miles of Jaen and met a huge landslide, a road block, where we decided to turn around and head back. Although we never got into the tropical vegetation we could plainly see it on the hilltops to the east - much like a cloud forest condition. At 98 miles E. of Olmos Ed got some nice embiids in rotting logs near the cemetary, but that's about all that was taken except a few butterflies. Collected a few things at lunch stop at about 87 miles E. of Olmos on Baccharis. We drove back over the pass and camped 28 miles E. of Olmos at about 2,000 mt. Ed got some new embiids, we got some nice Pepsis and

bibionids and night collecting gave a few scarabs.

1-20-55. Collected several places on way back to Olmos - the best being 21 miles E. of Olmos where Pepsis, Diabrotica, and Acalema, nice bee, and other nice things were taken. Lunch stop yielded a few things including some Long Lineau Small sow bugs. The night collecting at 13 miles N. of Piura gave a few ortalids, a couple of asalids and some tenebrionids and 1 therevid.

1-21-55. Today was spent driving to Tumbes, the only stop made was 10 miles S. of Zorritos for a nice swim in the ocean. Got 2 sp. of asilids. Arrived in Tumbes about 3:00 P.M., met Major Cardona who is helping us through Aduana etc. Staying in hotel.

1-22-55. Today we drove to the Ecuadorian border and got through without much trouble. We then drove to Arenillas where we had to ford a deep river. After getting an Ecuadorian chauffeur we finally made it to Santa Rosa (after dark) where we camped right in vacant lot in town. We had one bad ford that took 20 men to pull us out.

1-23-55. After finding out we couldn't get the ferry until the 24th, we drove S.W. out of Santa Rosa up into the mountains and camped by a very nice streambed, had a swim, and did some collecting. Night collecting was wonderful, got at least 100 aquatic leps of about 6 species. Also many diptera (heleiids) (about 11 miles from Santa Rosa).

1-24-55. Collected in heavy mesquite area about 2 miles N. of Santa Rosa. Then got on the Dayse Edith ferry and off to Guayaquil. Arrived in Guayaquil at 5:30 A.M.

1-25,26,27-55. Spent in Guayaquil getting car fixed etc. Had nice stay with Jackie Hanna (Schwarz).

1-28-55. Left for the coast. Collected bees etc. at 20 miles E. and embiids at 63 miles E. of Guayaquil. Camped on sea cliff 3 miles N.E. of La Libertad. Had nice swim and collected few things at light. Wilda hasn't been feeling too well the last few days.

1-29-55. Ed and I drove north beyond Mangralalto and managed to get into the tropical rain forest. Collecting was fair at every stop and then we returned to the beach camp.

1-30-55. We followed Dr. Levi-Castillo up the coast and into the Cinco Cerros Region. Got stuck in the mud. Had nice sandy beach ride. Collected at about 10 miles N. of Mangralalto. Camped about 8 miles S. of Mangralalto, near the beach - few insects.

1-31-55. Drove back to Guayaquil today. Got some nice nemestrinids today at about 2 miles N. of Valdima. Also got about 4 sp. embiids here. Stayed with Jackie in Guayaquil.

2-1-55. Drove north to an experiment station at Pichilingue just 8 miles S.W. of Quevedo. Collected some bees and syrphids just 10 miles N. of Guayaquil. Staying in a guest house on a plateau overlooking the river.

2-2-55. Spent all day in the Pichilingue area. Collecting fair, very similar to Tingo Maria but not as rich. Night collecting, some heleiids. Rained a lot during night.

2-3-55. Today was the day - got first acrocerid, Philopota n.sp., caught by Wilda feeding in mint flower just before noon. A male, too! Spent rest of day looking on mint flowers - no more. Collecting in general was good - lots of asilids.

2-4-55. Drove back to Guayaquil to finish up business there - all of us stayed with Jackie.

2-5-55. Drove north to Pichilingue. Collected 27 miles S. of Quereda and got many interesting coleopterans as well as dipterans. Ed got a few more embiids. Got one more of that beautiful yellow-antennaed Pepsis.

2-6-55. Today we crossed the river at Quevéda on a barge and drove on up into the Andes, through low jungle valley floor up through cloud forest and up to the puna or grass-land, even some new snow, and camped on other side of pass (must have been 12-13,000 ft.). We had good collecting 37 miles E. of Quevéda in lower cloud forest.

2-7-55. Drove on down into Ambato - had springs in rear fixed and then took the supposed road to Baños and camped 20 miles S. of Ambato at much lower altitude. We did some collecting at 5 miles S. of Latacunga. Ed got new apterous embiid. Also collected in creek bed north of Ambato.

2-8-55. Drove back to Ambato as bridge was out. Then took another road toward Baños. We finally got to Baños and then drove on another 35 miles to Shell Mera where we spent the night in Evangelist unit. Collected flies on Baccharis 1½ miles N.E. of Ambato, bees and wasps at 2 miles W. of Baños but that's about all.

2-9-55. Spent the whole day collecting between 2-8 miles N. of Puyo. Puyo is 6 miles E. of Shell Mera. Ed got 3 new embiids. Collecting only fair - no flowers, Diabrotica (at least 6 species). (Got stung by scorpion tonight.)

2-10-55. Today we collected again just N. of Puyo. Most of the time was spent in the heavy forest, and when the sun came out collecting was very good. No night collecting.

2-11-55. Went up toward Baños but actually only 8 miles W. of Mera. Most collecting was done 6-8 miles W. of Mera in forest (virgin) and some very nice insects were taken (see notes on Zethus)- got 1 more aquatic today.

2-12-55. Left Shell Mera and spent most of day collecting near and in Baños. A collecting spot about 2 miles E. of Baños yielded most of our catch, but of course Ed's special Calamaclostes were taken in Banos. Spent night in Palace Hotel.

2-13-55. This was acrocerid day. Most of our collecting was done on the north slope of Tungarahua Mt. from 6-11 miles W. of Baños around 7-8,000 ft. in a virgin growth area of wonderful flora. At just 8 miles up the Rio Bamba-Baños road I found the acrocerid larva (Lasia ?) just emerged from spider (see notes in biology notebook). We got nice Bombus 4-5 spp, as well as tachinids etc. Spent the night in a Eucalyptus grove just 4 miles west of Rio Bamba.

2-14-55. Today we drove to Cuenca where we spent the night in the Crespo Hotel - having dinner in our room !! We collected 8 miles N. of Alausi where Ed got some nice embiids. We got nice tachinids and vespids and lots of alcohol stuff. I worked on some trap-door spiders which were making horizontal burrows. We also collected 30 miles S. of Alausi, where more embiids on trees were taken, and also nice bibionids and spiders. Got 1 spider with Ichneumon larva on it - rearing it.

2-15-55. Spent the afternoon at Lago Zurucuchu 11 miles N.W. of Cuenca. Very interesting flora and fauna. It is about 3,500 meters high. Tarantulas and other interesting spiders. One Bombus on wild blackberry. Many tachinids, nice sawflies, etc.

2-16-55. Spent the whole day at Lago Zurucuchu and got many nice things, including 3 sp. embiids.

2-17-55. Today we drove east from Cuenca and spent the night in a cloud forest 8 km. E. (N.) of Sevilla de Oro. We collected 14 miles E. of Cuenca, and 3 and 11 miles E. of Paute in semi-arid zone with several sp. of embiids.

2-18-55. Spent rainy morning in cloud forest, then received telegram saying we should meet the Klinkiets at 2:00 P.M. in Cuenca. We found out it was only an appointment to see the museum. The Indians around the Sevilla de Oro area region are known as Pallatanga, and the elevation at 8 km. E. of Sevilla de Oro was 3,840 meters.

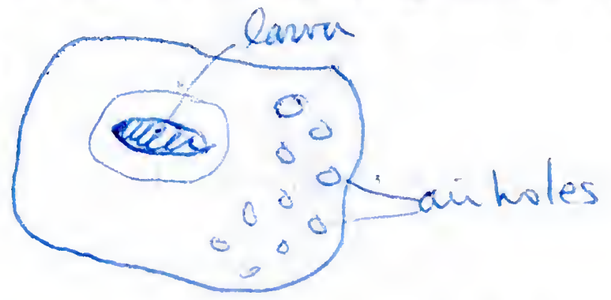
2-19-55. We had to spend the morning in Cuenca getting the car greased and the front spring fixed. Collected in the afternoon only at our camp just 4 miles down the Tambu-Duran road in the rain. Very few insects came to light.

2-20-55. Today was sunny for quite a while and collecting good at several spots S. of Alausi. Just 8 miles S. of Alausi saw lot of Calamoclostes on road bank. The flowers were in good bloom in the cloud forest on the west side. We camped in the Eucalyptus grove 4 miles W. of Rio Bamba.

2-21-55. Found out our front spring had several missing parts so had to go into Rio Bamba even during "Carnival" - water all over the place. The only collecting was done at our camp 15 miles N. of Latacunga on river bank. Baccharis was in bloom. Night collecting poor as too cold.

2-22-55. Left early and collected a few things in a nice forest (very high) about 25 miles N. of Latacunga. Also collected 15 miles S. of Quito - got embiids there. We then drove to Quito and then over the hill and down to Santa Domingo de los Colorados - where we stayed in the chapel of the Evangelists. Got some good light collecting.

2-23-55. Collected in the morning from 1-6 miles W. of Santa Domingo and in the afternoon 6 miles E. of town at the "Gloria Maria" Hacienda in a heavy forest - very good collecting. Got some aquatic lep larvae in small stream just south of the road. Seems like about 2 or 3 genera (?), the larger one (dark larva) had a nest like this:



The small one was just a linear silk tunnel along cracks of rocks. Then there were some small pupae in white cases also, but these probably belonged to the small larvae. Light collecting was superb. Many various moths - nice series of many species of heliods as well as good aquatics. Filled several boxes. All collected inside the house upstairs in the Hacienda of the Dryers.

2-24-55. We collected here in the morning and then spent the rest of the day driving up to Quito where we spent the night in the Hotel Cordillera.

2-25-55. Spent the day in Quito doing odd jobs and buying things for our trip north. Also bought a Swiss Altimeter ($25.00).

2-26-55. Spent the day in Quito getting car greased, letters written, etc.

2-27-55. Left Quito early today and drove all the way to Tulcan. We made about 3 collecting stops and are using my altimeter.

2-28-55. Today went through the border at Ipiales, Colombia, and drove to Pasto for the night. Ed got some embiids just 7 miles N. of Ipiales and got some nice tachinids at 49 miles N. of Ipiales. The country is beautiful and the Indians seem to be better dressed and have more things.

3-1-55. Today we decided to travel to the Oriente via the Mocoa Road. We collected in beautiful cloud forests, meadowlands, and low altitude forests, all in the same day. The lake, Lago La Cocha, about 2,600 meters is very pretty. Santiago and its Indians and huge lake bed (now a meadow) was also pretty. Spent the night at about 1,610 meters (above Mocoa). Got 1 nice aquatic at about 2,600 meters.

3-2-55. Spent the day in and around Mocoa, Pepino, Villa Garizon and out about 7 miles E. of Garizon. Got few aquatics. Got nice embiids (6 spp.) and lots of nice tropical stuff. Light collecting poor at night camp 6 miles S. of Mocoa at Jct. and Rio Pepino.

3-3-55. Got good series of aquatics at 1,910 meters. Got embiids at 3 different stops. Good stuff from pasture 5 miles E. of Santiago. Spent night at Pasto.

3-4-55. Left Pasto and made many embiid stops. Went past La Union and camped 34 miles S. of Popayan at about 1,480 meters. Got nice tachinids as usual. Got one sclerogibbid on fence post 4 miles S. of La Union.

3-5-55. Had to get our front spring fixed in Popayan. Got an aquatic and a larva at 11 miles N. of Popayan in fast-flowing stream at 1,830 meters. Looks like species from near Santa Rosa, Ecuador (?). Spent night 40 miles N. of Popayan. Ed got embiids at 3 stops today.

3-6-55. Did a little collecting today in pastureland 40 miles S. of Cali, but we did drive to Cali and no mail. Spent the night in public park with rain etc.

3-7-55. Drove north from Cali through muddy country to Palmira, then on to Buga and camped near creek just 2 miles from road Jct. on way to Bogota. Lots of mosquitos here. Did some collecting in morning waiting for tent to dry out. Rained almost all night. Got some blues.

3-8-55. Made several collecting stops today, but in general stuff just wasn't out and a lot of time was spent in very cloudy, rainy conditions. Spent the night 2 miles E. of Cajamarca. Ed got 2 spp. embiids.

3-9-55. Drove almost to Bogota today (about 10 miles west) through Ibaque - the hot, dry valley country at around 300 meters, then up through cloud forest (of coffee now) into the altoplano (dry now). Ed got 1 embiid at camp. Got Clathoda 5 miles E. of El Colegio at 1,370 meters.

3-10-55. After spending morning in Bogota shopping etc., headed out to Villavicencio. We stopped about 10 miles S. of Chesquia and got embiids. We camped near stream 3 miles N.W. of Villavicencio after dark. Got a few aquatics.

3-11-55. Spent morning collecting around the camp area - very good spot. Some red ant-like drassids took the prize. We drove to Villavicencio and on out to Rio Ocoa 4 miles S.E. of town, but not too good and very, very dusty. Came back to our camp and spent night.

3-12-55. I spent most of morning up to 3:00 P.M. collecting around camp. As our front spring had to be replaced - we then drove on up road toward Bogota where we camped 24 miles N.W. of Villavicencio near a fast-flowing stream. Lots of aquatics! Also others at light.

3-13-55. Drove on up to near the Mt. Crest 12 miles E. of Bogota. Collected embiids in dry valley area as well as in shrubby cloud forest at and near camp. Got a nice Villa today E. of Coquezon. In general, collecting was fair but scarce.

3-14-55. Spent morning in Bogota getting supplies and money changed, etc. Drove on down W. on the road to Manizales about 40 miles where we camped on new cut road about 10 miles from Alban. Ed got embiids on road bank at about cloud forest level, but the cloud forest has been mostly ruined for pasture. Some night collecting, got a couple of aquatics.

3-15-55. Today 1 miles W. of Villeta, got 1 male Ogcodes n. sp. (adaptatus group) sitting on top of rock pile on road bank. Looked in similar area as well as pasture land for more, but none. The area (which I'm sure was originally wooded) was mostly low shrubs, grass and pasture. The specimen was taken at altitude of 860 meters. Other collecting stops yielded Clothoda and 4 or 5 other species. We drove on past Honda (250 M) and camped at about 800 M, 9 miles W. of Honda. Good night collecting - many aquatics!

3-16-55. Drove through high mountain country today through Manizales and camped in plains near airport, 20 miles W. of Manizales. Also quite close to Rio Cauca. Got nice series of aquatics at light.

3-17-55. Drove north to Anserma and headed out toward Medellin, but the road was very bad so decided to head toward Cali. Did collect in small forested area 5 miles N. of Anserma, and also in pasture area 12 miles S. of Anserma. Drove on down to 19 miles S. of Cartago where we found nice camp in pasture area. Night collecting included mostly scarabs.

3-18-55. Drove on down to Cali - loaded our gear which was stored at Irragorri's house - checked with Grace Line and drove to night camp 6 miles N.W. of Cali off of Buenaventura Road. Did some collecting - Ed got 1 embiid - got 3 spp. aquatics.

3-19-55. Spent day around the night camp and collecting was very good - many tachinids - nice solitary vespids, one of which nested in old beetle burrows in fence post and sealed its holes with tiny rocks. This one looked like Ancistrocerus sp. (?). Got many lycaenids and other leps. Sunny here most of time - a real nice camp in small (but good) forest area at about 5,000 ft.

3-20-55. Collected part of the day 13 miles N.W. of Cali at 1,820 M. in pasture stump land on hill - got 4-5 spp. embiids and only a few other insects. Spent night at same camp and at light got good series of many spp. and genera of heleiids as well as crane flies etc. Also got many more nice tachinids at camp area. Saw a Puma outside of tent tonight.

3-21-55. Ed and I went over the hill toward Buenaventura about 33 miles from Cali - collected in forested area and stumps just the other side of the rather dry valley. Also collected 27 miles N.W. of Cali at a small town - got 3 spp. embiids. Got back to camp in time to get a few more things there - also Wilda collected around camp all day.

3-22-55. Rained all day today so we just stayed in our camp reading and mounting and getting ready for Buenaventura.

3-23-55. Today is our day - we went down to Buenaventura only to find the boat won't be in until the 27th or 28th. We did collect 40 miles E. of Buenaventura at a nice stream - got 1 aquatic lep, but couldn't find any larvae. Spent the night at Hotel Estacion after going aboard Santa Flavia and meeting Captain Stauss.

3-24,25-55. Spent these days getting gear ready for boarding and writing letters etc. Had breakfast and lunch on Santa Flavia and real good discussion on various problems.

3-26-55. Spent the day in Buenaventura - reading and writing - waiting for the boat to show up.

3-27-55. Spent the afternoon in forest area 12 miles E. of Buenaventura collecting. Got nice tabanids and vespids, but it was drizzling most of the time.

3-28-55. After the long awaited time, the Santa Juana arrived at 11:30 A.M. We were aboard by 3:00 P.M. with all baggage. Captain Halderman served drinks and we listened to music by his records. Spent evening with Purser Larry Stephens from Woodland - went to bed 4:00 A.M. Good V.O.?

3-29-55. Spent day on boat, as rained all day, and they couldn't load much. Went into town tonight to spend our remaining pesos.

3-30-55. Today we sailed out of Buenaventura at 6:00 A.M. bound for Puntarenas, Costa Rica. The water had many interesting animals to see during the day. We saw many very large turtles resting in the water at the top. Many of these had a bird on their backs. There were at least 2 kinds of flying fish, big schools of tuna, several small sharks, some very large red crabs, many sea-snakes of yellow and brown longitudinal stripes and yellow-brown rings around their necks (about 8-10), a whale was seen but from quite a distance, also. Just about 50 miles S. of Puntarenas, one of the green Uraneus moths came to light on ship. We docked in Puntarenas at about 10:00 P.M. on the 31st. Fish were attracted to the lights which were turned on the water.

4-1-55. Spent an hour or so on coast and got nice histerids, Haplobates, which were washed up on the shore at high tide, some ants, a few spiders and some Indian embiids on trees in the park. We sailed out at 10:30 A.M. bound for San Jose, Guatemala.

4-2-55. Spent entire day without seeing land - except, of course, near San Jose where we docked at 10:00 P.M.

4-4-55. Spent the whole day loading coffee. Ed and I and Leonard Wedell (the 2nd Engineer from Santa Cruz) went ashore and did a little collecting. It, however, was the driest dry season - nothing much out.

4-4-55. Sailed out at 8:00 A.M. for Manzinillo, Mexico. We didn't arrive in Manzinillo until the night of April 6 at about 10:00 P.M. Went to shore with Leonard Wedell of Santa Cruz - had a few beers.

4-7-55. Sailed out of Manzinillo at 8:00 A.M. Went most of day without seeing land.

4-8-55. Came across gulf of California early this morning and by Cape San Lucas. It has turned very cold today. Sun is out too! Saw lots of porpoises, lots of red water (see pictur) a hammer-head shark, whales, and also saw many jelly fish in Manzanillo Harbor yesterday.

4-9-55. Arrived in Los Angeles.

4-12-55. Arrived in San Francisco.

4-14-55. Arrived home.

List of Localities

in Peru, Ecuador, and Colombia where Insects were Collected by

Evert I. Schlinger and Edward S. Ross between September 11, 1954

and March 28, 1955

Code data have been used as follows:

For ALTITUDES: A - altitude readings with pocket altimeter Ex. A - 2,500M where M - meters

Map - altitudes as recorded directly from various maps. Ex. Map - 2,500 M.

Est. - altitudes estimated from maps and known heights of places nearby. Ex. Est. - 2,500M

For MILEAGE: Mi. - miles, Km. - kilometers

For CLIMATE ZONE:

(Major zones)

T - Tropical rainy climates

T.R. - Tropical rainforest type

T.M. - Tropical monsoon type - dense forest } dry

T.S. - Tropical savanna type - open forest } seasons

D. - Dry climates

D.S. - Semi-arid or steppe type

D.A. - Arid or desert type

M - Mesothermal climates (warm temp-

-erate rainy types).

M.W. - Mesothermal without dry season

M.D. - Mesothermal with dry season

P/C. - Polar climates (Páramo grasslands)

Subtitles to Major Zones

a.l - agricultural land

b - brush

b.c. - brushy canyon

b.h. - brushy hillside

c. - cactus

c.f. - cloud forest

c.t. - ceiba trees

l. - loma

m. - mesquite

m.f. - mountain forest

p - pasture land

p.t.- palm trees

r. - river

r.b. - riverside brush

r.f. - riverside forest

r.h. - rocky hillside

s.c. - sea coast

t. - trees

t.x. - thorny xerophytes

v.f. - valley forest

Locality	Date	Climate Zone	Altitude
(?) Loma Lachay, 16 Mi.N.W. Chancay, Lima, Peru	IX-11-54	D.S. - 1.	Est.=150M.
5Km.N.W. Chilca, Lima, Peru (= 8 Km NE Pucusana)	IX-12-54	D.S. - 1	" =100M.
1Mi.S. Pisco, Ica, Peru	IX-12-54	D.S.+r.b.+p.t.	" = 30M.
(?)Sea Coast nr. Cañete, Peru	IX-13-54	D.A.+s.c.	0
6Mi.S. San Antonio, Lima, Peru	IX-13-54	D.S.+r.b.+m.	" = 30M.
15Km.N.E. Chosica, Lima, Peru	IX-14-54	D.S.+r.b.+c.	" : 500M.
3Km.E. San Mateo, Lima, Peru	IX-14-54	D.S.+b+r.h.	" : 2,500M.
37Km.E. Carhuamayo, Junin, Peru	IX-15-54	P.C.+b.c.	" : 3,200M.
Huánuco, Huánuco, Peru	IX-16-54	D.S.+C.+A.L.	" : 2,000M.
12Mi.S. Huariaca, Pasco, Peru	IX-15-54	M.D.+p.	" : 2,500M.
2.Mi.S. San Rafael, Huánuco, Peru	IX-15-54	D.S.-b.c.	" : 2,000M.
30Mi.N.E. Huánuco, Huánuco, Peru	IX-17-54	M.W.&M.D. line-c.f.	" : 2.500M.
10Mi.S.W. Las Palmas, Huánuco,Peru	IX-17-54	T.R.	" : 1,000M.
Tingo María, Huánuco, Peru		T.R.	Map = 670M.
18MiE.Tingo María, Huánuco, Peru	IX-25-54	T.R.	Est.= 700M.
28Mi.E.Tingo María, Huánuco, Peru	IX-28-54	T.R.	" =1200M.
34Mi.E.Tingo María, Huánuco, Peru (in Cord. Azul)	IX-28-54	M.W.+m.f.	" =1700M.
43Mi.E. Tingo María, Huánuco, Peru (in Cord. Azul)	IX-28-54	T.R.	" =1200M
Yurac, 67Mi.E. Tingo María, Huánuco, Peru	IX-28-54	T.R.	" = 350M.
80Mi.E. Tingo María, Huánuco, Peru	IX-29-54	T.R.	" = 330M.
76Mi.W. Pucallpa, Huánuco, Peru	IX-29-54	T.R.	" = 320M.
67Mi.W. Pucallpa, Huánuco, Peru	IX-29-54	T.R.	" = 310M.
San Jorge,40Mi.W. Pucallpa, Huánuco, Peru	IX-29-54	T.R.+p.	" = 310M.
Yarina Cocha,10Km.N.W. Pucallpa, Huánuco, Peru	X-1 to X-3-54	T.R.	" =280M.

Locality	Date	Climate Zone	Altitude
East Side Crest of Carpish Mts. 40Mi. S.W. Tingo María, Huánuco, Peru	X-18-54 X-17 to	M.W.+c.f.	Est.=2,800M
15Mi.N.E. Tingo María, Huánuco, Peru	XI-11-54	T.R.+p.t.	Est.= 700M.
5 Mi.S.W. Las Palmas, Huánuco, Peru	XII-5-54	T.R.	Est.=1,000M.
26Mi.E. Tingo María, Huánuco, Peru	XII-10-54	T.R.	Est.=1,100M
50Mi.E. Tingo María, Huánuco Peru	XII-12-54	T.R.	Est.= 500M
40Mi.E. Tingo Maria, Huánuco Peru	XII-12-54	M.W. + p.	Est.=1,800M
20Mi.S.W. Tingo María, Huánuco, Peru	XII-28-54	T.R.&M.W.line	Est.=1,000M.
32Mi.N.E. Huánuco, (Carpish Mts) Huánuco, Peru	XII-28-54	M.W.+c.f.	Est.=2,800M.
27Mi.N.E. Huánuco, (Carpish Mts) Huánuco, Peru	XII-28-54	M.W.-c.f.	Est.=2,500M.
17Mi.N.E.Huánuco, Huánuco, Peru	XII-28-54	M.W.+h.h.+p.+b.	Est.=2,000M.
5Mi.N.E. Cerro de Pasco, Pasco, Peru	XII-29-54	P.C.+b.c.	Est.=3,500M.
48K.E. Carhuamayo, Junín, Peru	XII-30-54	P.C.+b.c.	Est.=3,200M.
Tarma, Junín, Peru	XII-30-54	D.S.+r.h.+b.	Map=3,050M.
13Mi.E. Tarma, Junín, Peru (= 4 mi. E. Acobamba)	XII-31-54	D.S.+a.l.+r.h.	Map=3,000M.
11Mi.W. San Ramon, Junín, Peru	XII-31-54	T.R.	Est.=1,200M.
? Colonia Perené, Río Perené, 18Mi. N.E. La Merced, Junin, Peru	I-1-55 to I-4-55	T.R.	750 M. Est.=1,000M.
2Mi.W. San Ramón, Junín, Peru	I-5-55	T.R.	Est.= 900M.
8Mi.W. Tarma, Junín, Peru	I-6-55	P.C.+r.h.+b.	Est.=3,500M.
Lima, Peru	I-12-55	D.S.+a.l.	Est.= 50M.
18Mi.N. Huacho, Lima, Peru	I-14-55	D.A.+s.c.	sea level
23Mi.N. Pativilca, Lima, Peru	I-15-55	D.S. +l.	Est.= 150M.
5Mi.N. Chimbote, Ancash, Peru	I-15-55	D.S.+a.l.	Est.= 20M.
4Mi.W. Otusco, La Libertad, Peru	I-15-55	M.W.+b.	Est=2,500M.

Locality	Date	Climate Zone	Altitude
15Mi.E. Trujillo, La Libertad, Peru	I-16-55	~~M.W.-b.~~ D S + b + c	Est.-~~Xx~~500M.
12Mi.N.E. Pacasmayo, La Libertad, Peru	I-16-55	D.S.+a.l.+r.h.	Est.= 50M.
5Mi.S. Chiclayo, Lambayeque, Peru	I-17-55	D.S.+a.l.+r.b.	Est.= 20M.
8Mi.S. Motupe, Lambayeque, Peru	I-17-55	D.S.+M.+C.	Est.= 100M.
20Mi.E. Olmos, Lambayeque, Peru	I-18-55	T.M.+t.x.	Est.=1,000M.
37Mi.E.Olmos, Lambayeque, Peru	I-18-55	M.D.+c.+r.h.	Map.=2,100M.
47Mi.E.Olmos, Lambayeque, Peru	I-18-55	D.S.+R.b.	Est.=1,200M.
52Mi.W. Jaén, Cajamarca, Peru	I-18-55-	D.S.+r.b.	Est.=1,000M.
32Mi.W. Jaén, Cajamarca, Peru	I-18-55	D.A.+m+b.c.	Est.= 700M.
39 Mi. W. " " "	" 19 "	D.S.+ rf+m	" = 750 M
20Mi.W. Jaén, Cajamarca, Peru	I-19-55	D.S.+r.f.+r.h.	Est.= 600M
28 Mi W. " " "	"	D.S.+ W.	" "
28Mi.E. Olmos, Lambayeque, Peru	I-19-55	M.W.+c.f.	Map =2,000M.
21Mi.E. Olmos, Lambayeque, Peru	I-20-55	M.W.+r.b.+m.f.	Est.=1,200M.
15Mi.E. Olmos, Lambayeque, Peru	I-20-55	M.D.+b.h.	Est.= 700M.
10Mi.E. Olmos, Lambayeque, Peru	I-20-55	T.S.+t.x,	Est.= 300M.
13Mi.N. Piura, Piura, Peru	I-20-55	D.S.+b.	Est.= 100M.
10Mi.S. Zorritos, Tumbes, Peru	I-21-55	D.S.+s.c.+b.	= 0M.
16Mi.S. Santa Rosa, El Oro, Ecuador	I-22-55	T.S.+c.t.	Est.= 100M.
Santa Rosa, El Oro, Ecuador	I-22-55	T.S.+T.x.	Est.= 20M.
15Mi.S.~~W.~~ Santa Rosa, El Oro, Ecuador	I-23-55	T.M.+r.	Est.= 300M.
9 Mi.S.~~W.~~ Santa Rosa, El Oro, Ecuador	I-23-55	T.M.	Est.= 250M.
6Mi. S.~~W.~~ Santa Rosa, El Oro, Ecuador	I-23-55	T.M.	Est.= 100M.
2Mi.N. Santa Rosa, El Oro, Ecuador	I-24-55	T.S.+m.	Est.= 10M.
20Mi.W. Guayaquil, Guayas, Ecuador	I-28-55	T.S.	Est.= 100M.

Locality	Date	Climate Zone	Altitude
15Mi.E. Santa Elena, Guayas, Ecuador	I-28-55	D.S.	Est.= 50M.
2Mi.W. Santa Elena, Guayas, Ecuador	I-28-55	D.S.+s.c.	= 0M.
7Mi.N.E. Santa Elena, Guayas, Ecuador	I-29-55	D.S.	Est.= 50M.
20Mi.N.E. Santa Elena, Guayas, Ecuador	I-29-55	D.S.+r.b.+m.	Est.= 20M.
1Mi.S. Valdivia, Guayas, Ecuador	I-29-55	D.S.+b.h.	0
8Mi.N.E. Manglar Alto, Guayas, Ecuador	I-29-55	T.S. or T.R.	Est.= 50M.
5Mi.N.E. Manglar Alto, Guayas, Ecuador	I-29-55	T.S. or T.R.	Est.= 50M.
3Mi.N. Manglar Alto, Guayas, Ecuador	I-30-55	T.S. or T.R.	Est.= 30M.
10Mi.N. Manglar Alto, Guayas, Ecuador	I-30-55	T.S. or T.R.	Est.= 50M.
7Mi.S. Manglar Alto, Guayas, Ecuador	I-30-55	D.S.+Tx.+h.b.	Est.= 30M.
8Mi.S. Manglar Alto, Guayas, Ecuador	I-31-55	D.S.+s.c.+b.h.	0
10Mi.S. Manglar Alto, Guayas, Ecuador	I-31-55	D.S.+Tx.+b.h.	Est.= 30M.
10Mi.N. Guayaquil, Guayas, Ecuador	II-1-55	T.S.+p.	Est.= 50M.
Pichilingue, Los Rios, Ecuador	II-2-55	T.M.	Est.= 40M.
37Mi.S.W. Quevedo, Los Rios, Ecuador	II-5-55	T.M.	Est.= 50M.
27Mi.S.W. Quevedo, Los Rios, Ecuador	II-5-55	T.M.	Est.= 50M.
29Mi.E. Quevedo, Los Rios, Ecuador	II-6-55	T.R.	Est.=1,000M
37Mi.E. Quevedo, Los Rios, Ecuador	II-6-55	M.W.+b.h.+m.f.	Est.=2,000M
30Mi.W. Latacunga, Cotapoxi, Ecuador	II-7-55	P.C.	Est.=3,800M.
5Mi.S. Latacunga, Cotapoxi, Ecuador	II-7-55	D.S.+b.c.	Map= 2,800M.

Locality	Date	Climate Zone	Altitude
Ambato, Tungurahua, Ecuador	II-7-55	D.S.+r.b.	Map=2,555M.
20Mi.S.E. Ambato, Tungurahua, Ecuador	II-8-55	M.S.+b.h.	Est.=2,000M.
6Mi.N. Ambato, Tungurahua, Ecuador	II-8-55	D.S.+b.h.	Est.=2,000M.
14Mi.N.E. Ambato, Tungurahua, Ecuador	II-8-55	M.W.+b.h.	Est.=2,700M.
2Mi.W.Baños, Tungurahua, Ecuador	II-8-55h.	M.D.+b.h.	Map =2,000M.
11Mi.E. Baños, Tungurahua, Ecuador	II-8-55	M.W.+m.f.	Map =1,300M.
Shell Mera, Napo-Pastaza, Ecuador	II-9-55	T.R.	Map =1,064M.
2-8Mi.N. Puyo, Napo-Pastaza, Ecuador	II-9-55	T.R.	Map = 953M.
6-8Mi.W. Mera, Napo-Pastaza, Ecuador	II-10-55	T.R.	Map =1,500M.
Baños, Tungurahua, Ecuador	II-11-55	M.W.+b.h.	Map = 1,820M.
6-12Mi.S.W. Baños, N. slope Mt. Tungurahua, Ecuador	II-13-55	M.W.+b.h.	Map = 2,500Mto 3,000M.
4Mi.W. Riobamba, Chimborazo, Ecuador	II-13-55	P.C.+a.l.	Map = 3,200M.
Tixán,8Mi.N.E. Alausí, Chimborazo, Ecuador	II-14-55	P.C.+a.l.+b.c	Map = 2,800M.
30Mi.S.W. Alausí, Chimborazo, Ecuador	II-14-55	M.W.+c.f.	Map = 2,500M
Lago Zhurucuchu,11Mi.W., Cuenca, Ecuador	II-16-55	M.W.+c.f	Map = 3,700M
Cuenca, Cañar, Ecuador	II-17-55	M.W.+a.l.+b.c.	Map = 2,530M
8Mi.W.Paute, Azuay, Ecuador	II-17-55	M.D.+b.h.c.	Map = 2,500M
3Mi.E. Paute, Azuay, Ecuador	II-17-55	M.D.+b.h.	Map = 2,500M
11Mi.E. Paute, Azuay, Ecuador	II-17-55	M.W.+p.+b.h.	Map = 2,800M to 3,000M
8KM.N. Sevilla de Oro, Azuay, Ecuador	II-17-55	M.W.+c.f.	A. =2,840M
4Mi.W. Juncal, Cañar, Ecuador	II-19-55	M.W.+b.h.	Map =2,200M

Locality	Date	Climate Zone	Altitude
Pistishi, 8Mi.S. Alausí, Chimborazo, Ecuador	II-20-55	M.W.+b.h.	Map =2,400M
6Mi.N. Juncal, Cañar, Ecuador	II-20-55	M.W.+b.h.	Map =2,500M
11Mi.N. Juncal, Cañar, Ecuador	II-20-55	M.W.+c.f.	Map 2,800M
16Mi.N. Latacunga, Cotopaxi, Ecuador	II-21-55	M.D.+p.+r.b.	Map =3,000M
26Mi.N. Latacunga, Cotopaxi, Ecuador	II-22-55	M.W.+M.f.+b.h.	Map =3,500M
15Mi.S.Quito, Pichincha, Ecuador	II-22-55	M.D.+b.h.c.	Map =3,000M
Santo Domingo de Los Colorados, Pichincha, Ecuador	II-22-55	T.R.	Map = 566M.
1-6Mi.W. Santo Domingo de Los Colorados, Pichincha, Ecuador	II-23-55	T.R.	Map = 550M
6Mi.W. Santo Domingo de Los Colorados, Pichincha, Ecuador	II-23-55	T.R.	Map = 575M
15Mi.N. Quito, Pichincha, Ecuador	II-27-55	M.D.+b.h.+r.h.	A. =1,930M
7Mi.S. Cayamba, Pichincha, Ecuador	II-27-55	M.D.+b.	A. =2,740M
20Mi.N. Ibarra, Imbabura, Ecuador	II-27-55	D.S.+r.b.	A. =1,650M
7Mi.N. Ipiales, Nariño, Colombia	II-28-55	M.W.+b.+p.	A. =2,970M
27Mi.S. Pasto, Nariño, Colombia	II-28-55	~~M.W.+b.+p.~~ D.S+rh++t	A. =1,960M
10Mi.E. Pasto, Nariño, Colombia	III-1-55	M.W.+c.f.	A. =3,000M
20Mi.E. Pasto, Nariño, Colombia	III-1-55	M.W.+c.f.+cycads	A. =3,170M
Santiago, Nariño, Colombia	III-1-55	M.W.+b.h.	A. =2,170M
21Mi.E. Santiago, Nariño, Colombia	III-1-55	M.W.+c.f.	A. =2,430M
22Mi.S.W. Mocoa, Nariño, Colombia	III-1-55	M.W.+c.f.	A. =2,600M
15Mi.S.W. Mocoa, Nariño, Colombia	III-1-55	T.R.	A. =1,610M
Mocoa, Nariño, Colombia	III-2-55	T.R.	A. = 700M
18Mi.S.E. Mocoa, Nariño, Colombia	III-2-55	T.R.+P.	A. = 510M
11Mi.S.E. Mocoa, Nariño, Colombia	III-2-55	T.R.	A. = 710M

Locality	Date.	Climate Zone	Altitude
6Mi.S. Mocoa, Nariño, Colombia	III-2-55	T.R.	A. =750M
18Mi.S.W. Mocoa, Nariño, Colombia	III-3-55	M.W.+c.f.	A. = 1,910M
25Mi.S.W. Mocoa, Nariño, Colombia	III-3-55	M.W.+c.f.	A. = 2,080M
16Mi.E. Santiago, Nariño, Colombia	III-3-55	M.W.+b.h.+p.	A. = 2,730M
5 Mi.E. Santiago, Nariño, Colombia	III-3-55	M.D.+p.	A. = 2,160M
27Mi.N. Pasto, Nariño, Colombia	III-4-55	M.D.+b.h.	A. = 1,900M
32Mi.N. Pasto, Nariño, Colombia	III-4-55	D.S.+b.h.	A. = 1,550M
15Mi.S. La Union, Nariño, Colombia	III-4-55	M.W.+b.h.+m.f.	A. = 2,150M
4Mi.S. La Union, Nariño, Colombia	III-4-55	M.W.+b.h.	A. = 2,120M
32Mi.N. La Union, nr. Rio Sambingo, Nariño, Colombia	III-4-55	D.S.+t.x.+r.f.	A. = 760M
27Mi.S. Popayan, Cauca, Colombia	III-5-55	M.W.+b.h.+p.	A. = 1,750M
19Mi.S. Popayan, Cauca, Colombia	III-5-55	M.D.+b.h.	A. = 1,930M
11Mi.N. Popayan, Cauca, Colombia	III-5-55	M.D.+b.h.+r.f.	A. = 1,830M
40Mi.N. Popayan, Cauca, Colombia	III-5-55	M.D.+b.h.	A. = 1,530M
15Mi.S. Corinto, Cauca, Colombia	III-6-55	M.D.+p.+v.f.	A. = 1,140M
17Mi.W. Sevilla, Valle, Colombia	III-7-55	M.D.+b.h.+p.	A. = 950M
2Mi.E. Sevilla, Valle, Colombia	III-8-55	M.D.+m.f.(?)	A. = 1,710M
2Mi.E. Caicedonia, Valle, Colombia	III-8-55	M.W.+m.f.	A. = 1,150M
9Mi.W. Sevilla, Valle, Colombia	III-8-55	M.D.+b.h.+Bacharis	A. = 1,100M
2Mi.W. Calarca, Caldas, Colombia	III-8-55	M.W.+m.f.	A. = 1,500M
2Mi.E. Cajamarca, Tolima, Colombia	III-9-55	M.W.+r.b.	A. = 1,740M
10 Mi.W. Ibagué, Tolima, Colombia	III-9-55	(?)	A. = 1,500M
10Mi.E. Ibagué, Tolima, Colombia	III-9-55	D.S.+r.f.+t.x.	A. = 790M
1Mi.N. Espinal, Tolima, Colombia	III-9-55	D.S.+r.f.	A. = 350M

Locality	Date	Climate Zone	Altitude
5Mi.E. El Colegio, Cundin Amarca, Colombia	III-9-55	~~D.S.+R.F.~~ T R	A. =1,370M
10Mi.W. Bogota, Cundin Amarca, Colombia	III-10-55	D.S.+p.	A. =2,500M
14Mi.S.W. Cáqueza, Cundin Amarca, Colombia	III-10-55	D.S.+r.b.+t.	A. =1,300M
3Mi.W. Villavicencio, Meta, Colombia	III-11-55	T.R.	A. = 920M
5Mi.E. Villavicencio, Meta, Colombia	III-11-55	T.R. +p.	A. = 410M
8Mi.W. Villavicencio, Meta, Colombia	III-12-55	M.D.+b.h.	A. =1,050M
24Mi.W. Villavicencio, Meta Colombia	III-12-55	M.D. + B.C.	A. =1,120M
29 Mi.W. Villavicencio, Meta Colombia	III-12-55	M.D. + b.c.	A. =1,230M.
11Mi. E. Cáqueza, Cundin Amarca, Colombia	III-13-55	D.S.+b.c.	A. =1,340M
7Mi.W. Cáqueza, Cundin Amarca, Colombia	III-13-55	M.D.+b.h.	A. =1,870M
12Mi.S.E. Bogota, Cundin Amarca, Colombia	III-13-55	M.W.+b.h.	A. =2,930M
7Mi.N.W. Facatativa, Cundin Amarca, Colombia	III-14-55	M.W.+b.h.	A. =2,500M
2Mi.E. Alban, Cundin Amarca, Colombia	III-14-55	M.W.+m.f.	A. =2,360M
2Mi.W. Alban, Cundin Amarca, Colombia	III-14-55	M.W.+m.f.	A. =2,020M
7Mi.W Alban, Cundin Amarca, Colombia	III-14-55	M.W.+m.f.	A. =1,610M
1Mi.W. Villeta, Cundin Amarca, Colombia	III-15-55	M.D.+b.h.	A. = 860M
10Mi.W. Villeta, Cundin Amarca, Colombia	III-15-55	M.D.+b.h.	A. =1,660M
5Mi.E. Guaduas, Cundin Amarca Colombia	III-15-55	M.D.+b.h.	A. =1,400M

Locality	Date	Climate Zone	Altitude
3Mi.E. Guaduas, Cundin Amarca, Colombia	III-15-55	M.D.+b.h.+t.	A. =1,230M
4Mi.W. Guaduas, Cundin Amarca, Colombia	III-15-55	T.R.	A. =1,200m
18Mi.W. Honda, Tolima, Colombia	III-16-55	T.R.	A. = 830M
14Mi.W. Fresno, Tolima, Colombia	III-16-55	M.W.+b.h.	A. =2,330M
27Mi.E. Manizales, Caldas, Colombia	III-16-55	M.W.+c.f.+cycads	A. =3,400M
20Mi.W. Manizales, Caldas, Colombia	III-16-55	M.D.+p.	A. =1,020M
5Mi.N. Anserma, Caldas, Colombia	III-17-55	T.R.	A. =1,750M
12Mi.S. Anserma, Caldas, Colombia	III-17-55	~~T.R.~~ MD+p+mf	A. =1,030M
19Mi.S. Cartago, Valle, Colombia	III-18-55	D.S.+p.+b.h.	A. = 960 M
6Mi.W. Cali, Valle, Colombia	III-20-55	MD.+r.f.	A. =1,630M
13Mi.W. Cali, Valle, Colombia	III-20-55	M.D.+m.f.	A. =1,820M
Salado, 27Mi.W. Cali, Valle, Colombia	III-21-55	D.S.+a.l.+t.	A. =1,260M
33Mi.W. Cali, Valle, Colombia	III-21-55	T.R.+p.	A. =1,350M
11Mi.W. Cali, Valle, Colombia	III-23-55	M.W.+t.	A. =1,940M
40Mi.E. Buenaventura, Valle, Colombia	III-23-55	T.R.	A. = 570M
12Mi. E. Buenaventura, Valle, Colombia	III-27-55	T.R.	A. = 30M